

**WE CLAIM:**

1. A method of determining the *initial dose* of a *vitamin D compound*, comprising:
  - a) measuring a patient *baseline PTH* value,
  - 5 b) determining the *final dose*,
  - c) applying the *baseline PTH* and *final dose* to regression analysis,
  - d) calculating the *initial dose* of the *vitamin D compound*.
- 10 2. The method of claim 1 wherein the linear model is a zero intercept linear model.
3. The method of claim 1 wherein the vitamin D compound is a vitamin D<sub>2</sub> compound.
- 15 4. The method of claim 3 wherein the vitamin D<sub>2</sub> compound is paricalcitol.
5. The method of claim 4 wherein the initial dose is bPTH/80.
- 20 6. The method of claim 1 further comprising administration of the initial dose to the patient.
7. A method of treating elevated PTH in a patient commencing treatment for ESRD, the method comprising:
  - (a) determining the initial dose of a vitamin D compound, and
  - (b) administering the initial dose of the vitamin D compound to the patient.

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8. The method of claim 7 wherein the vitamin D compound is paricalcitol.
  9. The method of claim 8 wherein the initial dose is about bPTH/80.
  - 5      10. A method of treating a patient undergoing vitamin D therapy for ESRD wherein the initial dose administered to the patient is about bPTH/80.
  11. A method of treating a patient undergoing vitamin D therapy for secondary hyperparathyroidism wherein the initial dose administered to the patient is about 10      bPTH/80.
  12. A method of using a zero-intercept linear regression model to determine the initial dose of a vitamin D compound.
  - 15      13. A method of treating a patient undergoing vitamin D therapy for ESRD wherein a zero-intercept regression model is used to determine the initial dose of the vitamin D compound.
  14. The method of claim 13, wherein the vitamin D compound results in the 20      prevention or treatment of renal osteodystrophy or secondary hyperparathyroidism.
  15. The method of claim 8 wherein the initial dose is at least 1 mcg.